

LISTING OF CLAIMS:

1. (Original) A recording medium having recorded thereon a video stream and a graphics stream, wherein:

the video stream represents a moving picture made up of a plurality of pictures;

the graphics stream is used for overlaying a menu on the moving picture, and includes interactive control information and graphics data;

the graphics data is used for generating both the menu and an effect presented for introducing or removing the menu;

the interactive control information includes a plurality of pieces of composition information defining a sequence of display compositions of graphics constituting the effect; and

each piece of composition information shows (i) a bounding area on a graphics plane within which a respective display composition is rendered and (ii) a duration after which the display composition is replaced by a subsequent display composition to be rendered within the same bounding area.

2. (Currently Amended) The recording medium according to Claim 1, wherein:

~~a size of the bounding area is 1/x of the entire graphics plane; and~~

a value of the duration shown by the composition information is calculated by multiplying y by a display duration of each picture of the moving picture.

3. (Original) The recording medium according to Claim 1, wherein

the duration is determined based on a value calculated by dividing the size of the bounding area by a transfer rate of a playback apparatus.

4. (Original) The recording medium according to Claim 1, wherein:
the graphics stream includes one or more pieces of pallet data;
the interactive control information includes a plurality of pieces of page information each defining a page of the menu available for presentation; and
each piece of page information includes a pallet ID uniquely identifying a piece of pallet data to be used for presentation of a respective page.

5. (Original) The recording medium according to Claim 1, wherein:
when the effect is an in-effect to be presented preceding the menu, a set of graphics data associated with the in-effect is located in a string of the graphics data before a set of graphics data associated with the menu;
the interactive control information is encapsulated in a packet; and
a timestamp attached to the packet shows a time for starting playback of the in-effect.

6. (Original) A playback apparatus used for playing back a video stream and a graphics stream, comprising:
a video decoder operable to decode the video stream to obtain a moving picture;
a graphics plane; and
a graphics decoder operable to decode the graphics stream to obtain uncompressed graphics on the graphics plane, so as to overlay the graphics on the moving picture, wherein:
the graphics stream includes graphics data and interactive control information;

the interactive control information includes a plurality of pieces of composition information defining a sequence of display compositions of graphics constituting an effect,

each piece of composition information shows (i) a bounding area on the graphics plane within which a respective display composition is rendered and (ii) a duration after which the display composition is to be replaced by a subsequent display composition to be rendered in the same bounding area;

each piece of composition information shows (i) a bounding area on a graphics plane within which a respective display composition is rendered and (ii) a duration after which the display composition is replaced by a subsequent display composition to be rendered within the same bounding area;

the graphics decoder includes

a composition buffer operable to store the interactive control information,

a processor operable to decode the graphics data included in the graphics stream,

and

a controller operable to assemble display compositions according to the composition information when uncompressed graphics are newly obtained by the processor, so as to play back the effect overlaid on the moving picture; and

the controller assembles a menu using uncompressed graphics obtained by the processor, so as to present the menu overlaid on the moving picture preceding or following playback of the effect.

7. (Original) The playback apparatus according to Claim 6, wherein each time a set of uncompressed graphics is obtained, the controller renders the obtained set of graphics within the bounding area on the graphics plane for a duration shown by the composition information.

8. (Original) The playback apparatus according to Claim 7, wherein:

the graphics decoder includes an object buffer operable to store uncompressed graphics obtained by the processor; and

the duration shown by the composition information is based on a value calculated by dividing a size of the bounding area on the graphics plane by a transfer rate at which uncompressed graphics are transferred from the object buffer to the graphics plane.

9. (Original) The playback apparatus according to Claim 6, wherein:

the uncompressed graphics obtained by the processor are expressed in code values;

the playback apparatus further comprises a look-up table unit operable to convert each code value to a pixel value;

the graphics stream includes one or more pieces of pallet data;

the interactive control information includes a plurality of pieces of page information each defining a page of the menu available for presentation;

each page information includes a pallet ID uniquely identifying a piece of pallet data to be referenced when presenting a respective page; and

when presenting a page, the controller instructs the look-up table unit to perform the conversion to pixel values using a piece of pallet data identified by a pallet ID associated with the page.

10. (Original) The playback apparatus according to Claim 6, wherein:

when the effect is an in-effect to be presented preceding the menu, a set of graphics data associated with the in-effect is located in a string of the graphics data before a set of graphics data associated with the menu;

the interactive control information is encapsulated in a packet; and

the controller starts playback of the in-effect when a playback of the video stream reaches a point shown by the timestamp attached to the packet.

11. (Original) A method for recording onto a recording medium, comprising:

generating application data; and

recording the application data onto the recording medium, wherein:

the application data includes a video stream and a graphics stream;

the graphics stream is used for overlaying a menu on the moving picture, and includes interactive control information and graphics data;

the graphics data is used for generating both the menu and an effect presented for introducing or removing the menu;

the interactive control information includes a plurality of pieces of composition information defining a sequence of display compositions of graphics constituting the effect; and

each piece of composition information shows (i) a bounding area on a graphics plane within which a respective display composition is rendered and (ii) a duration after which the display composition is replaced by a subsequent display composition to be rendered within the same bounding area.

12. (Original) A program used for enabling a computer to play back a video stream and a graphics stream, comprising:

code operable to cause the computer to decode the video stream to obtain a moving picture; and

code operable to cause the computer to decode the graphics stream to obtain uncompressed data on a graphics plane for overlaying on the moving picture, wherein:

the graphics stream includes graphics data and interactive control information;

the interactive control information includes a plurality of pieces of composition information defining a sequence of display compositions of graphics constituting an effect;

each piece of composition information shows (i) a bounding area on a graphics plane within which a respective display composition is rendered and (ii) a duration after which the display composition is replaced by a subsequent display composition to be rendered within the same bounding area; and

the code operable to cause the computer to decode the graphics stream includes code operable to cause the computer to assemble a display composition according to the composition information each time a set of uncompressed graphics is obtained, so that the set of uncompressed graphics is rendered within the specified bounding area on the graphics plane for the specified duration.

13. (Original) A method for playing back a video stream and graphics stream, comprising:

decoding the video stream to obtain a moving picture; and

decoding the graphics stream to obtain graphics on a graphics plane for overlaying on the moving picture, wherein:

the graphics stream includes graphics data and interactive control information;

the interactive control information includes a plurality of pieces of composition information defining a sequence of display compositions of graphics constituting an effect;

each piece of composition information shows (i) a bounding area on a graphics plane within which a respective display composition is rendered and (ii) a duration after which the display composition is replaced by a subsequent display composition to be rendered within the same bounding area; and

the decoding of the graphics stream includes assembling a display composition according to the composition information each time a set of uncompressed graphics is obtained, so that the set of uncompressed graphics is rendered within the specified bounding area on the graphics plane for the specified duration.

14. (New) A recording medium having recorded thereon a video stream and a graphics stream, wherein:

the video stream represents a moving picture made up of a plurality of pictures;

the graphics stream includes an interactive control segment and a plurality of object definition segments, the interactive control segment including a plurality of pieces of page information, and each object definition segment defining a graphics object;

each of the plurality of pieces of page information defines one of a plurality of interactive display compositions constituting a multi-page menu and includes an effect sequence and button information;

the button information specifies a graphics object used for presenting one state of a button, so that a corresponding one of the display compositions is presented on a corresponding page of the multi-page menu;

the effect sequence constitutes by using graphics objects an in-effect to be presented preceding the corresponding page or an out-effect to be presented following the corresponding page and includes effect information; and

the effect information defines a sequence of display compositions used for presenting the in-effect or the out-effect and includes (i) a plurality of composition objects each defining a display composition to be presented in a bounding area of a graphics plane and (ii) effect duration information indicating a duration after which one display composition rendered within the bounding area is replaced by a subsequent display composition to be rendered within the same bounding area.